In the Specification:

Please add the following new paragraph after the paragraph ending on line 4 of page 7:

--FIGS. 16A-D. Experimental device. FIG. 16A illustrates the device with the channels filled with bromthymol blue in 10 mM NaOH solution for visualization. FIGS. 16B – 16D illustrate different ratios of the widths of the aqueous:organic phase within experimental device of FIG. 16A, in which FIG. 16B illustrates a ratio of 1:3, FIG. 16C a ratio of 1:1, and FIG. 16D a ratio of 3:1.--

Please replace the three paragraphs beginning at page 34, line 8, and ending at page 35, line 12, with the following rewritten paragraphs:

--**Device.** Whitesides and Stroock[25] have recently described versatile flexible methods to construct microfluidic devices, especially by soft lithography. We have recently described a "strings and sealing wax" approach to experimenting with flow in shallow planar devices 160 using tapes/thin sheets as spacers and with binder clips 161 to hold things together. The present device constituted of a 6 mm thick 25 x 75 mm fluorinated ethylene-propylene copolymer (FEP) sheet 162. A channel 163 (50 x 1 x 0.1 mm L x W x D, computed volume 5 μL) with a trifurcation at each end 164 (constituting 3 inlets 165, 165', 165" and 3 outlets 166, 166', 166" with 0.5 mm apertures drilled through the FEP sheet) was inscribed on the FEP surface by conventional machining. The channel 163 was sealed at the top by a microscope slide 167, held together by binder clips 161. The device is shown in FIG. 16A.

Although the device 160 can be used with three parallel flow streams (an "eluent" stream 168 to be suppressed, an immiscible stream functioning as a liquid membrane 169, and a regenerant stream to regenerate the "membrane"), experience showed that the consumption of liquid is small and *in-situ*

"regeneration" is not especially worthwhile (regeneration, if desired, is better conducted off-line). All experiments reported here are based on two liquid streams. In some cases the central inlet/outlet port 165'/166' were not used at all, in others, two sets of adjacent inlet/outlet ports 165'& 165"/166'& 166", including the central one 165', 166', were used with a solution/suspension of the exchanger phase 170 to limit the width of the eluent phase 168.

Initial experiments also showed that the hydraulic resistance of the device is relatively small. Even a 10 cm hydrostatic head produced flow rates much higher than that desired. The respective liquids were therefore aspirated by a peristaltic pump (Miniplus 2, Gilson) from the device outlets at 2-10 μL/min. The liquids were aspirated at given flow rates from all three outlets, thus the total volumetric flow rate was the sum of the individual flow rates from the three outlets. The inlet liquid reservoirs were connected to the device with large bore tubing (1.25 mm) to eliminate any flow resistance. Normally the inlet reservoirs were maintained at a hydrostatic height of 10 cm. However, the reservoir heights were adjusted to modify the widths of the individual streams 168, 170 flowing through the channel 163, from only one liquid, to width ratios of 1:3 to 3:1 (see FIG. 16B, 16D, respectively). The change in width effectively changes the residence time. For quantitative exchange experiments, it also changes the mean diffusion distance for the exchangeable ion in the "eluent" stream 168 to the exchange interface 169.--

Please replace the paragraph beginning at page 37, line 7, with the following rewritten paragraph:

--Figure 3a shows the effect of different flow rates in the experimental system of Example 1 (see FIG. 16A). Each phase was 500 μm wide. 10 mM HCl and 150 mM butanolic TOAOH were used as eluent and exchanger phases, respectively.

In general, the results conform well with the computational results shown in Figure 2; however, small leaching of the ion exchanger into the aqueous phase makes it more difficult to exactly compute the fraction exchanged as the fraction exchanged value gets higher. As predicted, the fraction exchanged increases with decreasing flow rates. The contact time in the present device with phase widths of 500 μm and flow rates of 2 μL/min is ~50 s. As predicted in Figure 2a. a greater degree of suppression can be achieved by decreasing the width of the eluent phase. In the present experimental system, this is most easily achieved by adjustment of relative solution reservoir height s. Figure 3b shows the effect of decreasing the width of the eluent phase from 750 μm to 500 μm to 250 μm.—

Please replace the paragraph beginning at page 39, line 21, with the following rewritten paragraph:

--**Device.** Whitesides and Stroock[25] have recently described versatile flexible methods to construct microfluidic devices 80, especially by soft lithography. We have recently described an approach to experimenting with flow in shallow planar devices using tapes/thin sheets or layers 81, 81', 81" as spacers and with binder clips to hold things together.[26] A microfluidic device was constructed from two glass slides 82 (25 x 75 x 1 mm) and a plastic spacer. Two [[2]] holes were drilled into each of the glass slides 82 at the distance of 45 mm. Inlet and outlet stainless steel tubings 83, 83' (575 μm i.d. 1.05 mm o.d.) were affixed into the holes with epoxy glue. The flow channel 84 between two glass slides 82 was formed by a plastic spacer made from [[3]] three layers of materials. Black electric tape (thickness 150 μm) or Kapton tape (thickness 80 or 50 μm) and a transparency sheets (thickness 80 and 50 μm) were used as spacer materials. The final thickness of the spacer defining the channel depth could thus be varied from 150 μm to 400 μm. The approximate volume of the channel was 10 to 30 μL depending on its depth. The schematic of the device is depicted on FIG. 8 (upper

part). FIGS. 8a to 8d (lower part) demonstrate the principles of several processes that can take place in this device.--